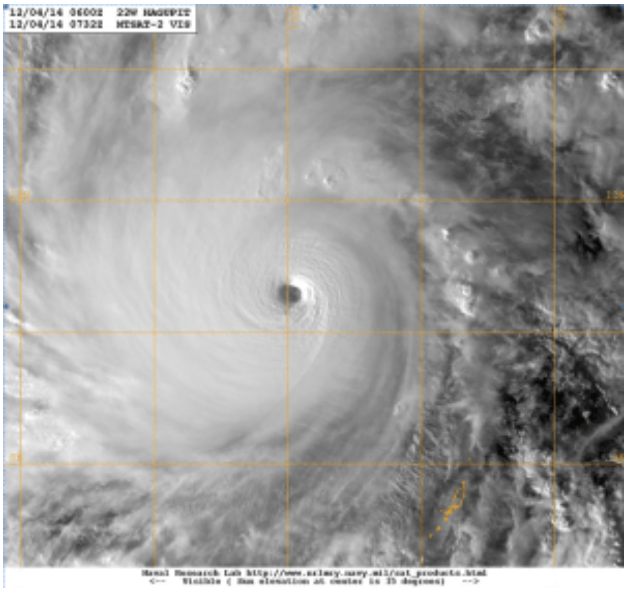
Typhoon Hagupit threatens the Philippines

Description

The typhoon season in the western North Pacific usually peaks in September and October. However, late season typhoons are not rare and this year Typhoon Hagupit has formed in December and poses a threat to the Philippines.

Hagupit developed in the open waters of the western Pacific becoming a tropical storm on 1 December. As it strengthened into a typhoon, it passed south of the Yap Islands and north of the island of Palau. In the last day, it has intensified rapidly and Typhoon Hagupit now has winds averaged over one minute of near 180 mph.

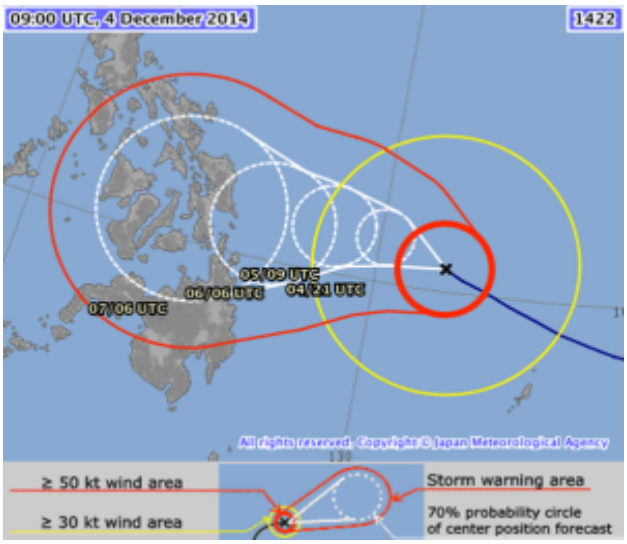


Typhoon Hagupit seen on 4 December 2014
Image courtesy of Naval Research Laboratory

With the effects of Typhoon Haiyan in November 2013 still fresh in the memory there is obvious concern of a possible repeat as Hagupit moves towards the Philippines. However, unlike for Haiyan, there is much more uncertainty as to the precise track and intensity of the typhoon in the coming few days.

One possible scenario is that Hagupit continues moving westwards and makes landfall on Saturday as a strong typhoon in a similar location to Typhoon Haiyan in 2013. Another scenario suggests that Hagupit will slow and make a slight turn north, but still makes landfall over the Central Philippines on Sunday. Yet another scenario predicts a marked turn northwards with the eye of the typhoon staying offshore altogether.

At this stage, the latter scenario seems the least likely outcome. Thus landfall somewhere over the Central Philippines seems likely to happen at some stage during the weekend. Below is the projected track of the storm from the Japan Meteorological Agency.



Forecast track of Typhoon Hagupit from the Japan Meteorological Agency

As ever with tropical cyclones, there are multiple hazards associated with landfall. With winds expected to remain well above 100 mph for the time being, there is the potential for significant structural damage if Hagupit makes landfall. Storm surge was a major hazard associated with Typhoon Haiyan and depending on the precise track of the storm could be again with Typhoon Hagupit. This would threaten coastal communities with flooding to the depth of several metres. One additional hazard which needs to be considered is heavy rain. If Hagupit reduces its speed of motion it could take a long time to cross the Philippines which would increase the threat from heavy rain, flooding and landslides.

In the last couple of years the Met Office has been working with the Philippines weather service PAGASA to help improve its weather forecasting capabilities with a particular emphasis on tropical cyclones, which are a regular threat to the country. In the last few days, our meteorologists have been providing advice on the latest predictions of the track and intensity and likely impacts of Typhoon Hagupit to counterparts in PAGASA.

Official warnings of west Pacific tropical storms are produced by the Japan Meteorological Agency. The Met Office routinely supplies predictions of cyclone tracks from its global forecast model to regional meteorological centres worldwide, which are used along with guidance from other models in the production of forecasts and guidance.

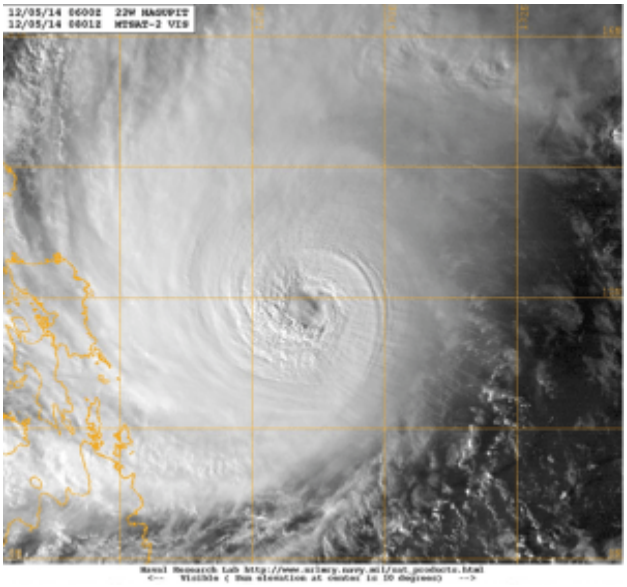
Met Office StormTracker provides a mapped picture of tropical cyclones around the globe with access to track history and six-day forecast tracks for current tropical cyclones from the Met Office global forecast model and latest observed cloud cover and sea surface temperature. We also provide updates on current tropical storms via @metofficestorms on Twitter.

Date Created
December 2014

Typhoon Hagupit still on course for the Philippines

Description

In yesterday's blog we reported on the formation of Typhoon Hagupit and its potential threat to the Philippines. At that time, winds averaged over one minute were estimated to be near 180 mph. During the last 24 hours Hagupit has weakened slightly, but winds are still estimated to be above 140 mph and the typhoon still shows an impressive structure as seen in the latest satellite image.



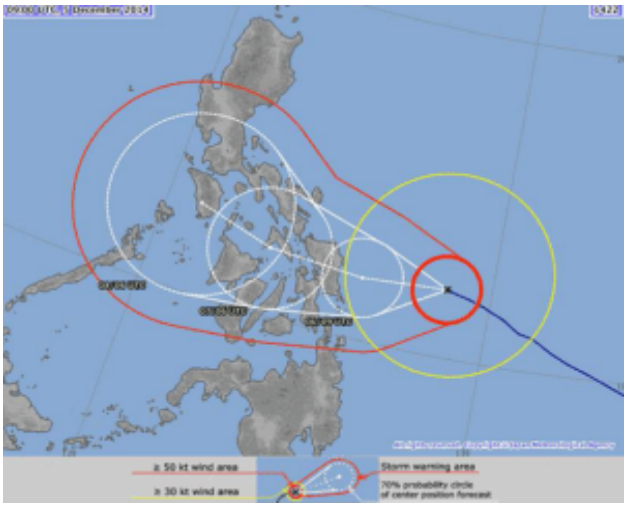
Typhoon Hagupit seen on 5 December 2014
Satellite image courtesy of Naval Research Laboratory

Forecasting the track of Typhoon Hagupit has been very problematic. Three possible scenarios were described in yesterday's blog. One of these – that Hagupit would turn north and not make landfall – is considered highly unlikely now. It seems likely that Typhoon Hagupit will make landfall on the coast of the Philippine island of Samar. However, some uncertainties still remain.

One possible scenario is that landfall occurs during Saturday and Hagupit takes a fast and westward track across the Philippines. This is likely to result in structural damage due to strong winds and a storm surge of a few metres along the coast of Samar Island.

An alternative scenario is that Hagupit slows its forward motion as it approaches the Philippines and makes a slight northwards turn. Landfall will still occur, but not until Sunday. The effects of strong winds and several hundred millimetres of rain will be felt in a broad swath including areas as far north as Manila and central Luzon. The heavy rain could last for days and would have the potential to cause significant flooding and landslides.

Below is the latest projection of the typhoon produced by the Japan Meteorological Agency (JMA):



The latest projection of the typhoon produced by the Japan Meteorological Agency (JMA)

As reported yesterday, Met Office scientists have been working closely with counterparts at the Philippines weather service PAGASA. We are providing the latest information on computer model predictions and are discussing the range of possibilities, highlighting which of the possible forecast outcomes is the most likely; this is helping PAGASA to manage their risks. We have also been providing information to Government departments such as FCO and DFID on the likely impacts of Typhoon Hagupit.

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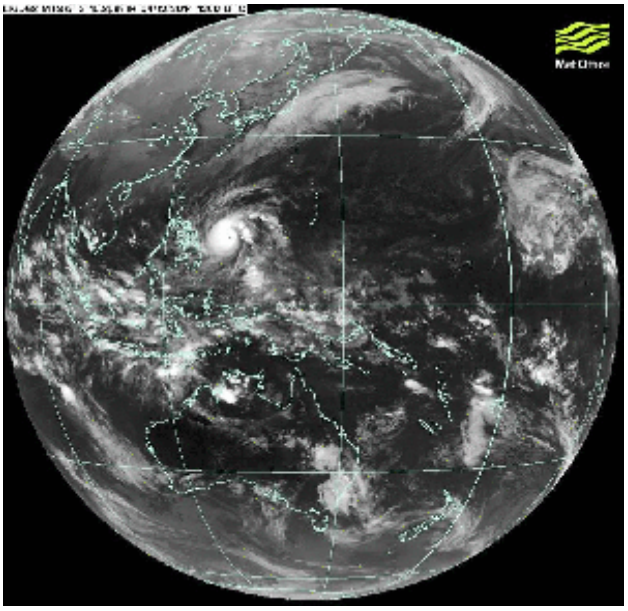
Date Created
December 2014

Typhoon Hagupit makes landfall in Philippines

Description

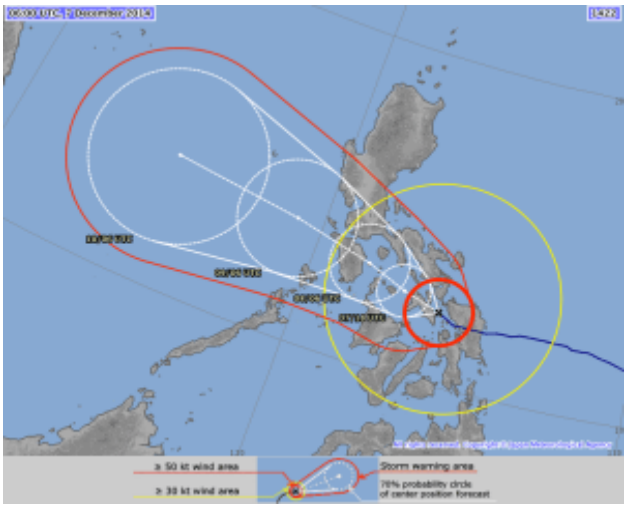
Typhoon Hagupit has made landfall in the eastern Philippines, on a very similar track to the one forecast on Friday. Hagupit (known as Ruby locally in the Philippines) made landfall in the central/east part of the island of Samar, at around 9pm UK time on Saturday 6 December.

Winds have decreased but it remains a very strong tropical cyclone with steady speeds estimated to be around 115mph and gusts peaking around 144mph when it made landfall. The storm is expected to continue to gradually weaken as it continues to track westwards across the Philippines over the next couple of days.


Satellite animation of Typhoon Hagupit 4 December to 7 December 2014

Rainfall on island of Samar has been between 300 and 400mm in the last 24 hours – Borongan has seen 396mm and Catbalogan 360mm. It is expected that the heavy rain will continue to give the greatest impacts as the typhoon moves slowly west over the next few days, bringing the potential to cause give widespread flash flooding and landslides.

The latest forecasts of the track of the typhoon continue to show it moving over the north of the Sibuyan Sea to Masbate/SE Luzon passing to the south of Manila on Monday. Hagupit is expected to have weakened to a Tropical Storm over the South China Sea during Tuesday 9th December (UK time).



The latest forecast of the typhoons path produced by the Japan Meteorological Agency (JMA)

Met Office scientists continue to work closely with counterparts at the Philippines weather service PAGASA. We are providing the latest information on computer model predictions helping PAGASA to ensure the citizens of Philippines can take the precautions necessary to protect themselves and their property where possible. We have also been providing information to Government departments such as FCO and DFID on the likely impacts of Typhoon Hagupit.

Official warnings of west Pacific tropical storms are produced by the Japan Meteorological Agency. The Met Office routinely supplies predictions of cyclone tracks from its global forecast model to regional meteorological centres worldwide, which are used along with guidance from other models in the production of forecasts and guidance.

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Date Created
December 2014

Max UK wind speeds – 10 December 2014

Description

UPDATED AT 11:30AM ON 10th DECEMBER 2014

Parts of the UK are being affected by strong winds today – particularly the north-western coast of Scotland.

Winds are generally much lighter in south-eastern parts, although still gusty – particularly around coasts.

We'll be updating this post through the day with the maximum wind speeds (from non-mountain sites) seen so far.

Date and time	Station	Area	Speed (mph)
10/12/2014 10:00	TIREE	ARGYLL	81
10/12/2014 09:00	SOUTH UIST RANGE	WESTERN ISLES	79
10/12/2014 05:00	ISLAY: PORT ELLEN	ARGYLL	77
10/12/2014 03:00	MACHRIHANISH	ARGYLL	73
10/12/2014 06:00	LOCH GLASCARNOCH	ROSS & CROMARTY	70
09/12/2014 22:00	HIGH BRADFIELD	SOUTH YORKSHIRE	70
10/12/2014 10:00	KIRKWALL	ORKNEY	69
09/12/2014 22:00	WIGHT: NEEDLES OLD BATTERY	ISLE OF WIGHT	69
10/12/2014 06:00	SULE SKERRY	ORKNEY	69
10/12/2014 06:00	STORNOWAY AIRPORT	WESTERN ISLES	69

Winds are almost always stronger at our high level weather stations (those that are sited at 500 metres of altitude or higher), which are also often very exposed. For this reason the winds from those sites are unlikely to reflect what the vast majority of people are experiencing. Bearing that in mind, the strongest gusts from the high level sites are quoted below for reference:

Date and time	Station	Area	Height (metres)	Speed (mph)
10/12/2014 11:00	CAIRNGORM SUMMIT	INVERNESS-SHIRE	1237	109
10/12/2014 05:00	BEALACH NA BA NO 2	ROSS & CROMARTY	773	105
10/12/2014 04:00	AONACH MOR	INVERNESS-SHIRE	1130	98
10/12/2014 06:00	CAIRNWELL	ABERDEENSHIRE	928	94
10/12/2014 03:00	GREAT DUN FELL NO 2	CUMBRIA	847	82

Date Created
December 2014

A closer look at ‘weather bombs’

Description

With strong winds affecting parts of the country today, there has been a lot of talk about ‘weather bombs‘ – but what are they and what do they mean for our weather?

First of all, it’s important to stress the UK is not being ‘hit’ by a weather bomb – the track of the low pressure system is well to the north of the UK, on roughly the same latitude as Iceland. We’re feeling its influence remotely.

This means we are not getting the very strongest winds associated with this system, but far north-western parts of the UK are seeing winds in the 70-80mph range as forecast. Further south the winds are much less strong – so London, for example, is unlikely to see even gale force gusts and mean wind speeds will be much lower.

Another point is that the ‘bomb’ element, the rapid deepening of the low pressure as explained below, happened on Monday – and its now just like any other powerful Atlantic low. In fact, the weather we’ll experience today is nothing unusual for the time of year.

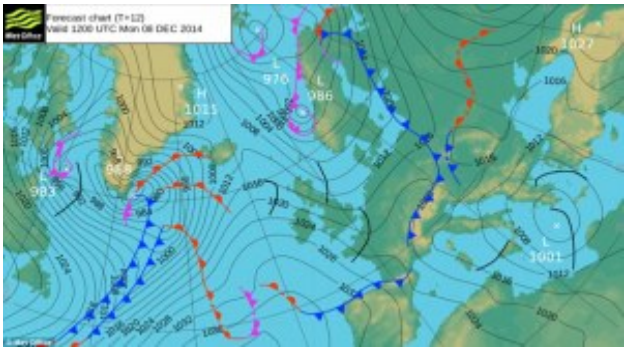

Chart showing a low pressure in the north-west Atlantic at midday on Monday 8 December.

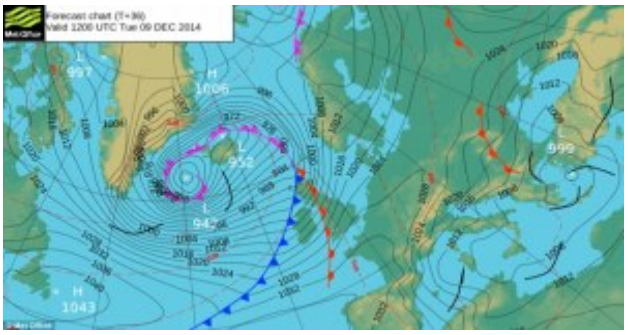

Chart shows the same system 24-hours later, with a 26 millibar fall in pressure.

So what is a ‘weather bomb?’

A ‘weather bomb’ is more usually referred to as ‘explosive cyclogenesis’ and is a meteorological term describing the rapid fall in central pressure of a depression (or low pressure) – it has to fall by 24 millibars in 24 hours in our latitudes to meet the criterion.

In many ways a ‘bomb’ can be seen as simply a more powerful, more intense version of the kind of Atlantic low pressure systems that normally affect the UK.

Climatologically speaking, explosive cyclogenesis events, or bombs, tend to occur most frequently over sea near major warm ocean currents, for example over the North Atlantic Ocean near the Gulf Stream or over the Western Pacific Ocean near the Kuroshio Current.

An explosive cyclogenesis event in these regions would then tend to happen as a particularly intense jet stream (which is a narrow band of strong winds high up in the atmosphere) interacts with an existing, and often weak, low pressure lingering near one of these warm ocean currents.

In other words, as with so many things in meteorology, it is the coming together of multiple ingredients that allow a ‘bomb’ to develop.

How many ‘bombs’ a year – and what is the impact?

There are gaps in the global observational record, so it’s difficult to give a definitive number of how many ‘weather bombs’ are seen globally each year. However, recent estimates based on a twenty to thirty year dataset suggest there are somewhere between 45 and 65 explosive cyclogenesis events per year, with more ‘bombs’ occurring in the northern than southern hemisphere.

Of course, it’s important to realise that the definition of a ‘bomb’ is somewhat arbitrary and ‘just a number’; a depression deepening only slightly less than 24hPa in 24 hours will still be a powerful depression more than capable of producing severe weather.

Another important point is that the track a ‘bomb’ takes relative to the British Isles, and at what stage of its development it does so, are key to its impact on UK weather – in general the closer the ‘bomb’ tracks to the British Isles the more severe the weather.

Date Created
December 2014

Geminid meteor shower

Description

The Geminid meteor shower is for many the highlight of the 2014 meteor shower calendar, starting back on 7 December it runs until the 16 December.

The peak of the Geminid meteor shower takes place this weekend (13-14 December), when you could see more than 50 meteors per hour. The Geminids is different to other meteor showers as its meteors originate from an asteroid, as opposed to a comet, meaning they are very rocky and gritty, making them slightly easier to see than other meteor showers.

The weather forecast for the UK as a whole for this weekend looks like;

Friday night (12 December) is mostly dry with mainly clear skys with patchy cloud for England and Wales leading to a cold frosty night with some icy stretches. Showers continue affecting the north and the west areas, with these being wintry in the north.

Saturday night (13 December) is again a cold night with some clear spells and patchy cloud for the southern half of the UK. Showers affecting Scotland will spread into northern England and Wales through out the night.

Sunday night (14 December) starts cloudy with showers or rain for many places but the cloud breaks up and becomes more patchy later in the night.

For star gazing tips check out our guide to watching the Geminid meteor shower, and to find out when other meteor events are taking place visit the Meteorwatch website.

To see the meteor shower, you don't need a telescope, binoculars or any other equipment but you do need to find a spot away from bright lights such as street lights. Check out the forecast in your area to see how good your view will be.

The UK has a number of Dark Sky Parks such as the Northumberland National Park, which is the northernmost national park in England and was designated a Dark Sky Park in December 2013, by the International Dark-Sky Association. Tonight in Northumberland National Park should be clear but very cold, Saturday night is cloudy and Sunday night is cloudy with the risk of wintery showers.

Exmoor National park is also a Dark Sky Reserve. Tonight any patchy cloud should clear in Exmoor National Park leaving a clear sky, however Saturday and Sunday night are looking much more cloudy.

Date Created
December 2014

Has there been a recent increase in UK weather records?

Description

There have been a striking number of temperature and rainfall records broken in recent years, according to an analysis by the Met Office which is published in the journal *Weather*.

The paper examines whether recent decades have seen an unusually high number of records broken in the UK. It looks at the number of records over time in the UK national statistics compiled by the Met Office's National Climate Information Centre (NCIC).

Records were collated from long-running national and regional series of monthly, seasonal and annual temperature, rainfall, and sunshine.

The analysis counts records by decade and weights them according to their relative importance. More weight is given to national records compared to regions, and more weight to annual records compared to individual months.

The UK's climate shows a large variability and this is bound to also be reflected in weather records. Even so, the analysis does reveal some interesting patterns.

Temperature records:

- Since 2000, there have been 10 times as many hot records as cold records.
- Taking into account the weighting, the period since 2000 accounts for two-thirds of all hot records in a national series from 1910, but only 3% of cold-records.
- The longer Central England Temperature (CET) series, which dates back to 1659, reveals a similar trend – with seven out of a possible 17 records set since 2000 but no record cold periods.
- The increase in hot records and decrease in cold records seen in recent decades is consistent with the long-term climate change signal. Seven of the warmest years in the UK series from 1910 have occurred since 2000.

Rainfall records:

- Since 2000 there have been almost 10 times as many wet records as dry records.
- Taking into account the weighting, the period since 2000 accounts for 45% of all wet records in a national series from 1910, but only 2% of dry records.
- Remarkably, period since 2010 accounts for more wet records than any other decade – even though this only a 5 year period. The most prominent wet records in this period were winter 2013/2014 and April, June and year 2012.
- The longer England & Wales Precipitation (EWP) series, which dates back to 1766, shows a similar trend – with six out of a possible 17 records set since 2000, but no record dry periods.
- The large number of recent wet records may be indicative of trends in underlying rainfall patterns. We would expect an increase in heavy rainfall with climate change and this is an area of active research within the Met Office Hadley Centre.

Sunshine records:

- In contrast with the other measures, there are no clear trends apparent in the sunshine records.

Exactly why we have seen these records is an ongoing area of research. You can see some discussion points related to this theme in a Met Office research paper on the drivers and impacts of our seasonal weather.

You can explore the Met Office's climate data for the UK on our climate pages.

Date Created
December 2014

Dreaming of a White Christmas?

Description

Summit of An Socach, the Cairngorms, Scotland.

UPDATED FRIDAY 19th DECEMBER

With less than a week to go before Christmas Day, we are going to look at the likelihood of a white Christmas – will we be waking up to a picturesque covering of snow on the big day?

So far, December has seen some large fluctuations in the weather, with spells of wetter, milder conditions interspersed with colder, sunnier conditions with temperatures closer to average.

Through today and tomorrow, we will see plenty of fine weather across the UK, with some crisp winter sunshine. There will be some showers across the north and west of the country, that are likely to be wintry over higher ground.

A return to largely mild weather is expected from Sunday (21st), with cloudy, damp conditions for many parts, and there is the threat of some heavy rain in places.

As we head into Christmas Eve and Christmas Day, there is still a fair amount of uncertainty – which is as you'd expect this far ahead. The strongest signal currently shown in the computer models is for the colder, showery weather to return across Britain, with showers most frequent across the north and east. But will we see any snow?

At this point, the most likely areas that will see some of the white stuff will be across higher ground in the north, with rain at lower levels. Temperatures will be fairly close to average and there will be some frosty nights under clear skies.

It is important to note, however, that there's still a small chance we could see different weather for Christmas Day. So with just under a week to go until the big day, it looks most likely that the majority of us won't be seeing a white Christmas. Because of the uncertainty of long range forecasts, however, we recommend staying up-to-date with our website for the latest information on our forecasts and

warnings.

Date Created
December 2014

White Christmas?

Description

Most people woke up yesterday to a green Christmas rather than a white one.

Snow was recorded at our observation site at Lerwick and some sleet was also recorded at Wick between 11am and 12pm, however for the rest of the UK it remained dry and clear throughout Christmas Day.

To find out what the forecast for your area is for the next five days visit our website: metoffice.gov.uk

Date Created
December 2014

2014: A year in weather

Description

2014 has been another year of eventful weather across the UK. Here we take a look at some of the year's more notable aspects.

Temperature

The obvious headline from 2014 is that it will be the warmest year in our UK record dating back to 1910, knocking 2006 from its top spot.

Using figures up to 28 December then assuming average conditions for the last three days of the year, the expected mean temperature for the UK is 9.9 °C. This beats the previous record of 9.7 °C set in 2006 and means all the UK's top eight warmest years have happened since 2002.

Despite the overall warmth, there were no record-breaking months – it's just a case that 11 out of 12 months (August being the exception) were warmer than average. Although individual months were unremarkable, it was the persistence of the warmth that was unusual and together they add up to something record-breaking.

It's also worth noting it's set to be the warmest year on record in the Met Office's Central England Temperature (CET) series, which dates all the way back to 1659. The mean temperature estimate for the year is 11.0 °C, which would just beat the record of 10.9 °C set in 2006.

Human influence on the climate is likely to have substantially increased the chance of breaking the UK and CET temperature records. Estimates from the Met Office suggest that it has become about ten times more likely for the UK record to be broken as a result of human influence on the climate.

Rainfall

It has also been a notably wet year, with the rainfall up to 28 December totalling 1290.0 mm. This ranks 2014 as the UK's 5th wettest year in the records back to 1910 and it is only 5mm away from 4th placed 2008, so this year could step a notch higher when the final two days of the year are included.

The first two months of the year really set us on the path to this high rainfall total, as both January and February were the third wettest in the record. The winter of 2013/2014 was especially wet across south-east England and it was the wettest winter for the UK in a series from 1910, and in the England and Wales precipitation series from 1766.

May, August, October and November were also all wetter than average. August was especially wet in northern Scotland – here it was the wettest August in a series from 1910. The other months were mostly drier than average, with September being notably dry – in fact it was the driest month on record for the UK in a series from 1910 with just 22.1 mm of rain.

Weather through the months

The year started with two spells of very wet and stormy weather from mid-December to early January, and late January to mid-February, as one deep low pressure system followed another. These brought extremely strong winds and heavy rain to all parts of the country, with widespread disruption across the UK.

A number of factors contributed to the unusually stormy weather, particularly the influence of a powerful Atlantic Jet Stream. You can see more about these in a report written by the Met Office. You can also explore the evolution of this spell of weather in our climate events pages.

The start of spring saw the weather calm down – with March bringing some much-needed drier and more settled weather. The spring (March – April – May) was warmer than average, while rainfall for spring ended up very close to average, which helped the UK recover from its wettest winter on record.

June and July saw a good deal of dry and fine weather, with above average temperatures and sunshine hours combining with below average rainfall. Although there were no major heatwaves, these months made for one of the better periods of summer weather that we've seen in recent years; summer 2013 also brought plenty of fine, settled weather in contrast to summers 2007 to 2012.

August was more unsettled, however, with above average rainfall and it was the only month of the year with below average temperatures. On 10th August the remants of ex-hurricane Bertha brought heavy rain and some flooding to parts of north-east Scotland.

September then immediately turned the tables, being exceptionally dry with above average temperatures. However, October and November brought some more typically autumnal weather and the autumn (Sep-Oct-Nov) ended up being fairly average overall, although again it was notably mild and with a marked absence of frosts.

December has seen the coldest temperatures of the year so far for all parts of the UK, but the lowest values for the year remain unusually high compared to previous years. The month so far (using figures up to the 28th of the month) has also been milder than average overall, despite the late cold snap. Rainfall looks set to be around average, while sunshine amounts are well above the norm.

Some 2014 extremes:

Max temp – 32.3 °C at Gravesend, Kent on 18 July. This is fairly typical: during most years we would expect the temperature to reach the low 30s in a few locations.

Min temp – -9.0 °C at Cromdale, in Moray, Scotland on 27 December. By contrast, this is unusually mild. During most winters we would expect the temperature to fall below -10 °C, if not -15 °C, most likely in Highland Scotland.

Max wind gust – 109mph at the Needles Old Battery on the Isle of Wight on 14 February

Wettest day – 146.8 of rain at Ennerdale, Black Sail, Cumbria on 6 March 2014. The high fells of the English Lake District are climatologically one of the wettest parts of the UK.

Date Created
December 2014